

REMARKS

Claims 1–21 were previously pending in this application. Claims 1, 14 and 19 have been amended herein. No new matter has been added. Applicants respectfully request reconsideration of the Application in view of the foregoing amendments and the following remarks.

Interview Summary

Applicants wish to thank the Examiner for the courtesy extended to Applicants' representatives on June 7, 2006, when the representatives called the Examiner regarding the February 8, 2006 Office Action. During the interview, Applicants' representatives discussed the most recent amendments to independent claims 1, 14 and 19 and explained that while Applicants' invention discloses a steering system that uses a driver to operate the steering wheel, the Shimizu et al. reference is directed to an automatic system. The Examiner agreed that amending claims 1, 14 and 19 to include "while a driver operates a steering wheel" indeed overcomes the Shimizu et al. reference. In closing, the Examiner informed Applicants' representatives that he will be conducting a new search for additional prior art. Pursuant to the foregoing, Applicants respectfully request withdrawal of the following rejections under 35 U.S.C. § 103(a).

Claim Rejections – 35 U.S.C. § 103

Claims 1–18 and 20–21 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Shimizu et al., U.S. Patent No. 6,275,754 B1, in view of Schofield et al., U.S. Patent No. 5,949,331. Claim 19 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Shimizu et al. in view of Schofield et al. and further in view of Franke et al., U.S. Patent No. 5,485,378. Applicants submit that the claims are patentably distinct from the cited references, taken either alone or in combination.

Shimizu et al. disclose a system for automatically parking a vehicle when there are one or more objects within a presumed locus of movement of the vehicle or when the vehicle start position at which the automatic steering system begins has been deviated. See Shimizu et al., col. 1, lines 58–61. Specifically, the automatic steering system in Shimizu et al. comprises a steering actuator 7, memory section 23, control section 22, object detecting means S_6 , determining section 24, steering angle detecting means S_1 and an operational stage display device 11. See Shimizu et al., col. 4, line 49–col. 2, line 37. According to the Specification, and as shown in Figures 3A–3C and 6A–6C, the operational stage display device 11 of Shimizu et al. displays a presumed path of movement of the vehicle based on one of four parking modes selected by the driver using mode selecting switch S_7 . See Shimizu et al., col. 5, lines 11–14; col. 5, line 58–col. 6, line 14. When the automatic steering system is in operation, the vehicle is automatically steered based on a selected parking mode, e.g., “back parking/left mode” as shown in Figures 3A–3C, even when the driver does not operate the steering wheel. See Shimizu et al., col. 6, lines 19–24. Shimizu et al. are silent as to a steering system wherein the vehicle is “driven in reverse while a driver operates a steering wheel.” In fact, Shimizu et al. specifically provide three ways for canceling the automatic steering system mode and restoring the vehicle to the usual power-steering control mode: (1) driver releases foot from brake pedal, (2) driver operates steering wheel or (3) the object detecting means detects an obstacle. See Shimizu et al., col. 6, line 62–col. 7, line 57. Thus, steering the vehicle is actually one of the ways for disengaging the system of Shimizu et al. See Shimizu et al., col. 7, line 3. It is clear from the Specification that the system of Shimizu et al. is designed to provide a driver with no steering capability while the vehicle is being driven in reverse via the automatic steering system.

The February 8, 2006 Office Action further asserts that the paths P_o-Q_o and Q_o-R_o in Figures 10 and 15 of Shimizu et al. represent a “first indication” and “second indication,” respectively, as disclosed by Applicants. See Office Action, 2/8/06, p. 3. The Office Action also indicates that the first indication, i.e., path P_o-Q_o , and the second indication, i.e., path Q_o-R_o , are

simultaneously displayed. Shimizu et al. do not disclose, however, a first indication, wherein the first indication is a fixed reference guide displaying vehicle width projecting behind the vehicle, which is simultaneously displayed, i.e., superimposed, with the second indication while the vehicle is being driven in reverse. Shimizu et al. only disclose a presumed path that the automatic steering system will follow. Importantly, the first indication of Shimizu et al., as defined by Examiner, does not project behind the vehicle and, rather, merely represents a target path along which the vehicle is automatically moved forward when the automatic parking control is performed. In Applicants' invention, the first indication is not a path along which the vehicle is moved. Similarly, the second indication of Shimizu et al., as defined by the Examiner, is a target path along which the vehicle is automatically moved and is not a prospective path corresponding to the current angle of the steered wheels as recited in Applicants' invention.

Moreover, according to the Examiner's interpretation of Shimizu et al. — that the paths P_0-Q_0 and Q_0-R_0 in Figures 10 and 15 of Shimizu et al. represent a "first indication" and "second indication," respectively — the first indication would only act as a target path while the vehicle is moving forward and the second indication would act only as a target path while the vehicle is moving in reverse. Thus, even under the Examiner's interpretation, the invention of Shimizu et al. does not provide a driver with the ability to make a comparison via the display screen between the current direction of the vehicle, i.e., the first indication, and where the current steering angle of the wheel will direct the vehicle, i.e., the second indication, such that the driver may manipulate the steering wheel to remain on course when driving in reverse. Rather, the Shimizu et al. invention simply displays a presumed path imposed on an image of the surroundings, wherein the presumed path is not used for added steering. Shimizu et al. fail to disclose a second indication that continuously changes when backing to reflect the current predicted path of the vehicle based on the angle of the wheels at that point in time. In fact, Shimizu et al. teach away from such a display by disclosing a memory section 23 which stores a predetermined locus of movement of the vehicle to a target position and then executes that

movement without assistance from the driver in accordance with the selected parking mode. See Shimizu et al., col. 13, lines 26–29.

Regarding claim 14, the February 8, 2006 Office Action also indicates that Shimizu et al. disclose displaying a marker that is fixed at a predetermined position with respect to a monitor for aiding a driver in parking, wherein the vehicle is moved in reverse so as to cause the marker to coincide with a corner of a parking space displayed on the monitor, followed by backing while keeping the steered wheels turned at their maximum angle. See Office Action, 2/8/06, pp. 7–8. Shimizu et al. fail to disclose, however, a system whereby parallel parking is completed by moving the vehicle while the driver is operating the steering wheel so as to cause a marker to coincide with the corner of a parking space as displayed on the monitor, wherein upon the marker matching the corner of the parking space, the wheels are turned to their maximum steering angle. Rather than superimposing a marker on the corner of a parking space through manipulation of the steering wheel, Shimizu et al. merely disclose a series of stationary target points predetermined based on the locus of movement and the selected parking mode. Shimizu et al. also fail to disclose that markers P, Q and/or R are fixed at a predetermined position with respect to the monitor and that such markers coincide with a corner of a parking space displayed on the monitor when the parallel parking is performed. In fact, Shimizu et al. merely describe P as a start position, Q as a shifting position and R as a parking position. See Shimizu et al., col. 11, lines 19–25.

The Examiner also submits that the combination of Shimizu et al. and Schofield et al. renders Applicants' invention obvious to one skilled in the art. The invention of Schofield et al. is directed to improving the display of rearward images captured by a rearview vision system for a vehicle. See Schofield et al., col. 1, line 13–col. 2, line 24. Schofield et al. specifically describe a rearview vision device having at least two image capture devices positioned on a vehicle and directed rearwardly with respect to the direction of travel of the vehicle. See

Schofield et al., col. 2, lines 20–33. Although the February 8, 2006 Office Action states that Schofield et al. evidence a fixed reference guide displaying vehicle width projecting behind the vehicle, the Specification of Schofield et al. makes clear that Figure 6 and hash marks 70a and 70b, in fact, change configuration in response to the angle of the steering wheels of the vehicle. See Schofield et al., col. 10, lines 48–55 (“If the wheels were turned in the opposite direction, graphic overlays 70a, 70b would curve clockwise toward the right as viewed in FIG. 6. If the vehicle's wheels were straight, graphic overlays 70a, 70b would be substantially straight converging lines.”). In other words, Schofield et al. do not teach “a first indication, which is a fixed reference guide displaying vehicle width projecting behind the vehicle.” Thus, Schofield et al., either alone or in combination with Shimizu et al., do not teach or suggest a first indication, which is a fixed reference guide corresponding to the angle of zero degrees of the steered wheels, and a second indication, which is a prospective path corresponding to the current angle of the steered wheels, simultaneously displayed for the purpose of aiding steering when the vehicle is being driven in reverse while a driver operates a steering wheel.

Applicants, on the other hand, disclose a system whereby the driver operates the steering wheel based on the position of a second indication relative to a first indication while the vehicle is being driven in reverse. In particular, Applicants' invention simultaneously displays an image of the road, a fixed frame of the vehicle representing the current direction of the vehicle, i.e., the first indication, and a guiding frame indicating the direction the vehicle will move in response to the current steering angle, i.e., the second indication. Unlike the references cited above, these two frames are continuously and simultaneously displayed on the monitor while the vehicle is being driven in reverse. Advantageously, data representing a predetermined second indication corresponding to various angles need not be stored in memory because the CPU in Applicants' invention computes the predicted path of the vehicle using the steered angle and then superimposes the second indication on the image captured by the camera.

Regarding Claim 19, the February 8, 2006 Office Action admits that the combination of Shimizu et al. and Schofield et al. is silent as to a vehicle which proceeds “on a route when the vehicle is driven so that the second indication is positioned at a center of the route, the route being an image of a way behind the vehicle actually displayed on the monitor.” See Office Action, 2/8/06, p. 9. Nonetheless, the Examiner believes that the teachings of Franke et al., in combination with Shimizu et al. and Schofield et al., would have made obvious the modification of the steering and viewing systems in Shimizu et al. and Schofield et al., respectively, for maintaining a controlled course. The invention of Franke et al., however, is directed to a device which provides a driver with the ability to intervene with the steering operation while minimizing the need for the driver to constantly make small steering adjustments to maintain a prescribed set position. See Franke et al., col. 1, lines 50–67; col. 2, line 1. Franke et al. are silent as to a method for steering a vehicle in reverse, whereby a second indication is positioned at the center of a route, the route being an image behind the vehicle that is displayed on a monitor. Franke et al., therefore, do not teach or suggest the steering system disclosed by Applicants in claim 19 and, furthermore, fail to remedy the deficiencies of Shimizu et al. and Schofield et al.

For at least these reasons, Applicants submit that amended independent claims 1, 14 and 19 are patentably distinct from the cited references, taken either alone or in combination. Further, Applicants submit that claims 2–13, 15–18 and 20–21, which directly or indirectly depend from amended independent claims 1 and 14, are also patentably distinct from the cited references for at least similar reasons. Therefore, Applicants request withdrawal of these grounds of rejection.

Serial No. 09/484,316
Response dated June 8, 2006
Reply to Office Action of February 8, 2006

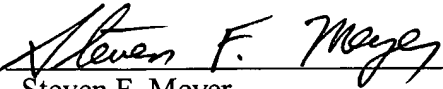
Docket No. 5000-4723

CONCLUSION

Based on the foregoing amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the rejection of the claims and allowance of this application.

Respectfully submitted,
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Dated: June 8, 2006

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